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with the balance, water, wherein a hard surface cleaned therewith is rendered repellant to staining by heavy metals.

Please delete existing Claim 9 and replace it with the following therefore:

9. (2X amended) An improved liquid aqueous hard surface cleaner, comprising:

(a) a water-dispersible fluoropolymer having a molecular weight of at least 5000 Daltons;

(b) a surfactant; and

(c) a chelating agent/buffer;

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with the remainder, water, wherein the hard surface cleaner has at least 10% faster dry times and causes a hard surface cleaned therewith to be rendered repellant to staining by heavy metals.

REMARKS

The application was examined in a second Office Action dated 21 August 2002, in which no claims were allowed. Applicants herein amend the specification and claims, and request reconsideration of the newly amended specification and claims in light of the comments below.

1. Specification

The specification is amended at pages 2, 4 and 5 to correct minor grammatical errors. The amendments at pages 2 and 4 correct an inadvertent run-on sentence. The amendment at page 5 supplies a missing verb. Support for the requested amendments at pages 2 and 4 comes from the specification as filed at page 2, lines 2-29; and page 3, lines 6-9. Support for the requested amendment at page 5 comes from the immediately following sentence at page 5, lines 19-21, which contains the same verb. The requested amendments are provided for clarity purposes to correct grammatical errors that were inadvertently present in the specification as originally filed. None of the foregoing add new matter to the specification.

2. Claims

Claims 1 and 9 are amended in order to more clearly define and point out that which the inventors regard as their invention. Support for the requested amendments to Claims 1 and 9 may be found in the specification as filed on page 2, lines 18-23 and 28-29; page 5, lines 14-16; page 15, lines 18-20; and Table II on page 16.

None of the foregoing amendments add substantive matter to the original specification,

and are requested mainly for purposes of clarity.

THE INVENTION

The present invention provides an improved liquid aqueous hard surface cleaner. The cleaner is intended especially for use with hard surfaces, and in particular hard vitreous surfaces. Application of the cleaning composition to vitreous surfaces results in imparting to the surface the ability to repel and withstand soiling and staining.

The aqueous liquid hard surface cleaner comprises a water-dispersible fluoropolymer that has a molecular weight of at least 5,000 Daltons, a surfactant and a chelant. It was surprisingly found that incorporation of the high molecular weight fluoropolymer in the cleaning compositions of the present invention provided increased resistance to hard water staining. The high molecular weight fluoropolymer also provided the added benefit of at least a 10% decrease in required drying times as compared to cleaning compositions that lacked a high molecular weight fluoropolymer.

FIRST OBJECTION UNDER 35 U.S.C. §102

In the Office Action dated 21 August 2002, the Examiner rejected Claims 1-9 under 35 U.S.C. §102(b) as being anticipated by Burke, *et al.* (U.S. Pat. No. 5,932,328, "Burke"), stating:

Burke teach[es] hard surface coating compositions. An example...is a cleaning ***and polishing*** composition (col. 7, example III). Note these compositions are used as furniture polishes on surfaces such as ceramics (col. 2, lines 8-15; emphasis added).

For the reasons set forth below, Applicants respectfully disagree with the Examiner.

In order for a rejection under 35 U.S.C. §102(b) to be appropriate, "a single [prior art] source must contain all the elements of the claim." *Hybritech Inc. v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1379, 231 U.S.P.Q. 81, 90 (Fed. Cir. 1986). For the following reasons, Applicants maintain that the first objection under §102(b) based on Burke is in error and must be withdrawn.

First, Burke teaches and claims a furniture *coating*. Burke is thus directed solely towards putting down a coating that protects the underlying furniture and leaving that coating in place.

The present invention teaches cleaning compositions that render hard surfaces highly repellent to soils and stains (p.2, lines 21-23). The cleaning compositions of the present invention thus provide a dual purpose. They clean and impart a protective fluoropolymer treatment. The fluoropolymer imparts a lasting ability of the surface to repel staining and soiling. As Burke teaches and recites only a *coating*, Burke cannot anticipate the present invention.

Second, Burke's coating has a bottom layer of silicone oil, an intermediate water-repelling film-forming polymer layer and a top oil layer. Burke thus teaches and claims a *three-layer* coating composition. The cleaning compositions of the present invention appear to lay down a film or other treatment on the hard surface. The resulting *monolayer* repels and prevents or mitigates further staining due to hard water (p.5, lines 15-16). As Burke teaches and recites a *three-layer* coating, Burke cannot anticipate the present invention.

Third, Burke's coatings are designed for *furniture* applications, "especially *furniture* having a *lacquer* layer or film on at least a portion of the external surfaces thereof" (col. 2, lines 15-17, emphasis added). The cleaning compositions of the present invention are suitable for use on hard surfaces, in particular vitreous surfaces. The inclusion of silicon oil in the present invention would render the surfaces slippery and susceptible to lipophilic soil buildup. Thus Burke cannot anticipate the present invention, because it *teaches away* from the salient cleaning characteristics of the inventive cleaning compositions.

Fourth, Burke in no way limits fluoropolymers to those having a particular molecular weight, let alone specify that the fluoropolymer should have a molecular weight of over 5,000 Daltons. As Burke is thus silent with respect to an element of the present invention, Burke cannot be regarded as anticipatory.

In light of the foregoing, Applicants assert that the rejection of Claims 1-9 under 35 U.S.C. §102(b) based on Burke must fail, and that independent Claims 1 and 9 and the claims dependent thereon are allowable as herein amended. Favorable reconsideration of Claims 1-9 is therefore respectfully requested.

SECOND OBJECTION UNDER 35 U.S.C. §102

Claims 1-5 and 7-9 of the present invention were rejected under 35 U.S.C §102(e) in the

Office Action dated 21 August 2002 as being anticipated by Klayder, *et al.* (U.S. Pat. No. 6,013,323, "Klayder"). The Examiner stated: "Klayder, *et al.*, teach silicone wax and protectant compositions" and that "as the compositions of Klayder teach the *identical components* as applicants' composition, the protectants of Klayder will inherently possess cleaning properties" (emphasis added). Applicants respectfully disagree with the Examiner. Klayder does *not* teach a chelant and thus does *not* teach *identical components*. The Examiner's arguments must fail for the reasons set forth below.

In order for a rejection under 35 U.S.C. §102(e) to be appropriate, "a single source must contain *all* the elements of the claim," (*Hybritech, vide supra*, emphasis added). As recited in independent Claims 1 and 9, the inventive compositions contain a chelant, which is neither taught nor claimed in Klayder. As will be recognized by those knowledgeable in the cleaning arts, chelants are useful in metal complexation and thus aid in the removal of heavy metals such as those found in hard water stains. Furthermore, as recited in newly amended independent Claims 1 and 9 herein, Applicants' invention imparts a repellency to hard surfaces against staining by heavy metals. Klayder is silent on the cleaning and repellency of stains overall, let alone stains due to heavy metals. Lacking the elements of Applicants' invention, therefore, Klayder cannot anticipate the cleaning and protective compositions of the present invention.

Klayder teaches silicone gelled waxes or protectants in combination with an *optional* fluoropolymer to *enhance the appearance* of "surfaces such as plastics, vinyl, leather, rubber, etc., *particularly those materials such as found in car interiors* (col. 2, lines 18-20, emphasis added). Klayder employs a fluoropolymer to "impart slip, longevity and durability to the silicone gel protectant" (col. 2, line 40). Klayder teaches a gelled composition to enhance the appearance of surface features such as gloss (col. 3, lines 35-37) and shine (col. 3, lines 60-63). By contrast, Applicants' invention is directed towards cleaning and coating compositions which are suitable for use on hard surfaces that are repeatedly exposed to hard water, such as *toilet bowls* and *urinals*. Applicants use a fluoropolymer to provide repellency against soils and hard metal staining, neither feature of which is taught or recited in Klayder. Klayder must therefore fail as a reference upon which to sustain a §102(b) rejection.

Withdrawal of the §102(b) rejection based on Klayder and reconsideration of the claims as herein amended is respectfully sought.

THIRD OBJECTION UNDER 35 U.S.C. §102

In the Office Action dated 21 August 2002, the Examiner rejected Claims 1-5 and 7-9 under 35 U.S.C. §102(b) as being anticipated by Eoga (U.S. Pat. No. 5,509,118). The Examiner stated: “Eoga teaches a tablet forming cleanser...compris[ing] *polytetrafluoroethylene*, EDTA, and nonionic surfactant...used for denture cleaning” (emphasis added). The Examiner further stated that “As this reference meets all material limitations of the claims at hand, the reference is anticipatory.” Applicants maintain that the objection under §102(b) based on McCleod is in error and must be withdrawn.

In order for a rejection under 35 U.S.C. §102(b) to be appropriate, “a single source must contain *all* the elements of the claim,” (*Hybritech, vide supra*, emphasis added). Applicants maintain that Eoga cannot anticipate the present invention because Eoga does *not* teach or claim a *water-dispersible* fluoropolymer as do Applicants. The polymeric fluorocarbons used by Eoga are water-*insoluble*, uncharged micropowders that are *not* water dispersible.

Eoga’s solid, tabletted, oxidative denture cleaners contain water-insoluble fluorocarbon polymers, such as *polytetrafluoroethylene*, to dimensionally stabilize the tabletted cleaners (col. 8, Example I). By contrast, Applicants specifically distinguish the present invention *away from* polytetrafluoroethylene, stating: “in the invention, the applicable fluoropolymers, do *not* completely replace the aliphatic hydrogens with fluoride, as in *polytetrafluoroethylene*....” (page 4, line 32 to page 5, line 2, emphasis added). Thus, the use of polytetrafluoroethylene is *contrary* to Applicants’ teaching.

Finally, nowhere does Eoga teach or recite the removal of hard water stains, let alone the rendering of a hard surface repellant to staining by heavy metals. For the foregoing reasons, Eoga cannot anticipate the cleaning and protective compositions of the present invention. Eoga must therefore fail as a reference upon which to sustain a §102(b) rejection.

Applicants respectfully urge the withdrawal of the §102(b) rejection based on Eoga, and request further consideration of the claims presented herein.

FIRST OBJECTION UNDER 35 U.S.C. §103

At page 4 of the Office Action dated 21 August 2002, the Examiner rejected Claims 1-9

under 35 U.S.C. §103 as being unpatentable over Burke (U.S. Pat. No. 5,932,328, cited above). The Examiner alleged that although Burke does not teach quaternary ammonium surfactants, “such surfactants are well known for use in hard surface cleaners and do not add patentable weight to the claims.” Applicants maintain that the Examiner is in error and that the §103 objection must be withdrawn.

To establish a *prima facie* case of obviousness, 35 U.S.C. §103 requires a showing that the prior art relied upon, coupled with the knowledge generally available in the art at the time of the invention, must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or to combine references. *In re Fine*, 837 F.2d 1071, 1074, 5 USPQ.2d 1596, 1598 (Fed. Cir. 1988). Second, the proposed modification of the prior art must have had a reasonable expectation of success. *Amgen, Inc. v. Chugai Pharm. Co.*, 927 F.2d 1200, 1209, 18 USPQ.2d 1016, 1023 (Fed. Cir. 1991). Finally, the prior art reference or combination of references must teach or suggest *all* the limitations of the claims. *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

For the following reasons, the rejection under 35 U.S.C. §103 is in error and must fail. First, even assuming, *arguendo*, that Burke *had* included a surfactant, Burke could not render the present invention obvious. Burke teaches a triple-layer composition, comprising two layers of silicon oil that is used as a furniture coating. Applicants teach a fluoropolymer treatment that renders a surface impervious to hard water stains. There is no motivation in Burke, either alone or taken in combination with Klayder and Eoga, that would teach removal of Burke’s silicon oil layers or modification of the triple-layered coating to provide a cleaner that would also impart a barrier to furniture towards metal ion staining by hard water. Furniture is seldom exposed to repeated washing with water where staining by hard water might be of concern.

Second, *even if* Burke had included a surfactant, there is nothing in Burke, either alone or in combination with Klayder and Eoga that would suggest Applicants’ chelant *in combination with* a water-dispersible fluoropolymer. In fact, as cited above, Eoga teaches *away from* Applicants’ water-dispersible fluoropolymer. Eoga uses polytetrafluoroethylene, whereas Applicants state that the applicable fluoropolymers *to not* completely replace the aliphatic hydrogens with fluoride, *as in polytetrafluoroethylene...*” (see p. 5, lines 1-5, emphasis added).

Finally, there is no hint or motivation in any of the cited references, whether Burke alone or Burke taken in combination with Klayder and Eoga, that would suggest or hint at rendering a hard surface repellant to staining by heavy metals as taught and claimed by Applicants.

For the foregoing reasons, the present invention is not obvious in view of Burke, and therefore the rejection under 35 U.S.C. §103 must fail. Withdrawal of this rejection and reconsideration of the pending claims as amended herein is therefore respectfully urged.

CONCLUSION

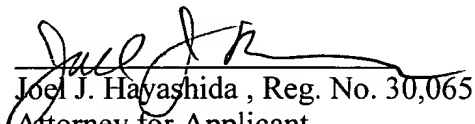
Applicants maintain that the claims as herein amended are novel and neither anticipatory nor obvious over the cited art. Favorable consideration is therefore respectfully requested. If the next action of the Examiner is other than to allow the claims, the favor of a brief telephonic interview is requested.

FEE AUTHORIZATION **37 C.F.R. §1.17**

Please charge the fee due of \$110.00 for the above one-month Petition for an Extension of Time to Deposit Account No. 03-2270. (37 C.F.R. § 1.17(a)(1)). The Assistant Commissioner is hereby authorized to charge any additional fees, which may be required in connection with this paper, or credit any overpayment, to Account No. 03-2270. This sheet is submitted in duplicate.

Dated: 18 December 2002

Respectfully submitted,


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AMENDMENT TO THE SPECIFICATION AND CLAIMS
WITH MARKINGS TO SHOW CHANGES

AMENDMENTS TO THE SPECIFICATION

1. On page 2 at lines 8-23, in the first complete paragraph on the page:

The present invention is directed to an improved, liquid aqueous hard surface cleaner containing a fluoropolymer having a molecular weight of no less than 5,000, further containing preferably a nonionic surfactant, optionally, a quaternary ammonium compound, a chelating agent/buffer and water. **The foregoing** are combined to provide enhanced cleaning of hard surfaces, in which the thus cleaned surface is rendered soil and stain repellent. Surfaces treated with the improved, liquid aqueous hard surface cleaner, especially vitreous hard surfaces, such as porcelain, glazed tile surfaces, marble, granite, other stone, grout, wood, leather, glass, mirrors or other, shiny metallic surfaces (or other hard, glossy surfaces, whether made of natural or composite materials), and the like, are rendered brighter and shinier in appearance. More importantly, though, in the case of vitreous surfaces such as toilet bowls and urinals, which are subject to hard water staining due to high metal content (egs., iron and calcium, perhaps also, manganese ions) in the flush water, the inventive hard surface cleaner leaves a film or other treatment which renders such surfaces highly repellent to soils and stains, namely from such metals.

2. On page 4 at lines 17-22, in the first complete paragraph on the page, please delete the existing text and replace it with the following therefor:

The present invention is directed to an improved, liquid aqueous hard surface cleaner containing a fluoropolymer having a molecular weight of no less than 5,000, further containing preferably a nonionic surfactant, optionally, a quaternary ammonium compound, a chelating agent/buffer and water. **The foregoing** are combined to provide enhanced cleaning of hard surfaces, in which the thus cleaned surface is rendered soil and stain repellent.

3. On page 5 at lines 1-21, in the first partial paragraph on the page, please delete the existing text and replace it with the following therefor:

invention, the applicable fluoropolymers, do not completely replace the aliphatic hydrogens with fluoride, as in polytetrafluoroethylene. Alternatively, it is believed that the fluoropolymers must be at least partially substituted with water solubilizing groups, such as, without limitation, carboxyl, amido, sulfonato, ethoxyl, propoxyl and the like. It is thus believed that the fluoropolymers must be at least water-dispersible, and preferably, are at least sparingly water-soluble. These types of fluoropolymers include fluorinated substituted urethanes (such as Zonyl® 7910 from E.I. du Pont de Nemours and Co., hereinafter, "DuPont"), and perfluoroalkylmethacrylic copolymers (such as Zonyl® 8740 from DuPont. Pertinently, because these compounds are fluoropolymers, they will enhance the rheology of the liquid cleaners of the invention and will not require additional thickeners, as in Can. Patent 2,201,406. Moreover, after application to a stained surface, such as toilet with hard water or heavy metal stains, the cleaner not only cleans the stains, but the fluoropolymers in the cleaner beneficially appear to lay down a film which repels, prevents or mitigates further staining due to the hard water. This is a significant and surprising benefit of the inventive cleaner. The amount of fluoropolymer should be added preferably in amounts of about 0.01 to 25% by weight, more preferably about 0.01 to about 15% by weight, and most preferably, about 0.01 to about 5% by weight. The addition should be relatively sparing (owing to its costs), and so amounts as low as up to 2.5% are especially favored.

AMENDMENTS TO THE CLAIMS

Claim 1. **(2X amended)** An improved liquid aqueous hard surface cleaner, comprising:

- (a) a water-dispersible fluoropolymer having a molecular weight of at least 5000 Daltons;
- (b) a surfactant; and
- (c) a chelating agent/buffer;

with the balance, water, wherein a hard surface cleaned therewith is rendered repellant to staining by heavy metals.

Claim 9. **(1X amended)** An improved liquid aqueous hard surface cleaner, comprising:

(a) a water-dispersible fluoropolymer having a molecular weight of at least 5000 Daltons;

(b) a surfactant; and

(c) a chelating agent/buffer;

with the remainder, water; wherein [said] the hard surface cleaner has at least 10% faster dry times and causes a hard surface cleaned therewith to be rendered repellant to staining by heavy metals.

* * * * *